Diabetologia

Clinical and Experimental Diabetes and Metabolism
Organ of the European Association for the Study of Diabetes (EASD)

Editor-in-Chief

M. Berger, Düsseldorf

Deputy Editor-in-Chief

R. Tattersall, Nottingham

Associate Editors

K. D. Buchanan, Belfast
R. M. Denton, Bristol
J. Gliemann, Aarhus
P. D. Home, Newcastle-upon-Tyne
U. Keller, Basel
Y. Le Marchand-Brustel, Nice
U. Di Mario, Rome
H. Ørskov, Aarhus
G. Tchobroutsky, Paris
J. D. Ward, Sheffield

Editorial Assistant

S. Spencer-Smith, London

Assistant Editors

H. J. Bodansky, Leeds
B. M. Dean, London
P. L. Drury, London
A. N. Gorsuch, London
F. W. Kemmer, Düsseldorf
G. E. Sonnenberg, Düsseldorf
D. B. J. Thomas, London

Advisory Board

K. G. M. M. Alberti, Newcastle-upon-Tyne
J. P. Assal, Geneva
S. Baba, Kobe
H. Bibergeil, Karlsburg
P. Brunetti, Perugia
I. Drury, Dublin
S. Efendic, Stockholm
D. Hepp, Munich
Z. Laron, Petah Tikva
P. Lefèbvre, Liege
R. Menzel, Karlsburg
J. Minçu, Bucharest
G. M. Molinatti, Turin
H. H. Parving, Copenhagen
S. Raptis, Athens
A. H. Rubenstein, Chicago
R. H. Unger, Dallas

Volume 26/1984

Springer International

Submission of a manuscript implies that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review or thesis), that it is not under consideration for publication elsewhere, that its publication has been approved by all the authors and by the responsible authorities – tacitly or explicitly – in the laboratories where the work was carried out and that, if accepted, it will not be published elsewhere in the same form, in either the same or another language, without the consent of the copyright holders. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform, electronic data-base, video-disks, or any other reproduction of similar nature, and translations.
Photographic reproduction, microform, electronic data-base, video-disks, or any other reproduction of text, figures, or tables from this journal is prohibited without permission obtained from the publisher.

The use of general descriptive names, trade names, trade marks, etc., in this publication, even if the former are not specifically identified, is not to be taken as a sign that such names are exempt from the relevant protective laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of going to press, neither the authors nor the editors nor the publisher can accept legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for the USA: Photocopies may be made for personal or internal use beyond that permitted by Section 107 or 108 of the U.S. Copyright Law, provided a fee is paid. This fee is $0.20 per page or a minimum of $1.00 if an article consists of less than five pages. Please pay this fee to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0012, volume, and first and last page numbers of each article copied.

The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

Other regulations: Authors of this journal can benefit from library and photocopy fees collected by VG WORT if certain conditions are met. If an author lives in the Federal Republic of Germany or in West Berlin, it is recommended that he contact Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, for detailed information.

Springer-Verlag Berlin Heidelberg New York Tokyo. Printed in Germany by aprinta, Wemding
Copyright © Springer-Verlag GmbH & Co. KG Berlin Heidelberg 1984

Contents

Review articles

Bottazzo, G.F.: β-Cell damage in diabetic insulitis: are we approaching a solution? 241
Hellerström, C.: The life story of the pancreatic B-cell 393
Howell, S.L.: The mechanism of insulin secretion 319
Jarrett, R.J.: Type 2 (non-insulin-dependent) diabetes mellitus and coronary heart disease – chicken, egg or neither? 99
Kennedy, L., J.W. Baynes: Non-enzymatic glycosylation and the chronic complications of diabetes: an overview 93
Kohner, E.M., P.J. Barry: Prevention of blindness in diabetic retinopathy 173

Controversial topics

Hillson, R.M., T.D.R. Hockaday: Chlorpropamide-alcohol flush: a critical reappraisal 6
Johnston, C., P.G. Wiles, D.A. Pyke: Chlorpropamide-alcohol flush: the case in favour 1
Waldhäusl, W.: To flush or not to flush? Comments on the chlorpropamide-alcohol flush 12

Originals

Ahrén, B., C.B. Corrigan: Prevalence of diabetes mellitus in North-Western Tanzania 333
Asplin, C.M., P.M. Hollander, J.P. Palmer: How does glucose regulate the human pancreatic A cell in vivo? 203
Baldissera, F.G.A., J.J. Holst: Glucagon-related peptides in the human gastrointestinal mucosa 223
Betterle, C., F. Zanette, B. Pedini, F. Presotto, L.B. Rapp, C.M. Monciotti, R. Rigon: Clinical and subclinical organ-specific autoimmune manifestations in Type 1 (insulin-dependent) diabetic patients and their first degree relatives 431
Boulton, A.J.M., R.C. Worth, J. Drury, C.A. Hardisty, E. Wolf, A.G. Cudworth, J.D. Ward: Genetic and metabolic studies in diabetic neuropathy 15
British Multicentre Study Group: Photocoagulation for proliferative diabetic retinopathy: a randomised controlled clinical trial using the xenon-arc 109
Bruining, G.J., J. Molenaar, C.W. Tuk, J. Lindeman, H.A. Bruining, B. Marner: Clinical time-course and characteristics of islet cell cytoplasmatic antibodies in childhood diabetes 24
Chavers, B., D. Etzwiler, J. Barbosa, F.H. Bach, A.F. Michael: Albumin deposition in dermal capillary basement membrane in parents of Type 1 (insulin-dependent) diabetic patients 415
Collier, G., A. McLean, K. O'Dea: Effect of co-ingestion of fat on the metabolic responses to slowly and rapidly absorbed carbohydrates 50
Deleers, M., W.J. Malaisse: Binding of hypoglycaemic sulphonylureas to an artificial phosph[illegible]yer 55
Dyrberg, T., P. Poussier, F. Nakh[illegible] E.B. Marliss, Å. Lernmark: Islet cell surface and lymphocyte antibodies often precede the spontaneous diabetes in the BB rat 159
Eichler, H.G., A. Korn, S. Gasic, W. Pirson, J. Businger: The effect of a new specific α-amylase inhibitor on post-prandial glucose and insulin excursions in normal subjects and Type 2 (non-insulin-dependent) diabetic patients 278
Elliott, R.B., J.M. Martin: Dietary protein: a trigger of insulin-dependent diabetes in the BB rat? 297
Faure, A., B. Billaudel, B.Ch.J. Sutter: Adrenal interference on insulin secretion after 14 days oestradiol treatment in female rats 76
Feingold, K.R., S.R. Lear, A.H. Moser: De novo cholesterol synthesis in three different animal models of diabetes 234
Foulis, A.K., J.A. Stewart: The pancreas in recent-onset Type 1 (insulin-dependent) diabetes mellitus: insulin content of islets, insulitis and associated changes in the exocrine acinar tissue 456
French, R.R., D.A. York: The regulation of adenylate cyclase in adipocyte plasma membrane from genetically obese (*ob/ob*) mice 466
Frøkjær Thomsen, O., A.R. Andersen, J. Sandahl Christiansen,

T. Deckert: Renal changes in long-term Type 1 (insulin-dependent) diabetic patients with and without clinical nephropathy: a light microscopic, morphometric study of autopsy material 361
Gagliardino, J.J., M.C. Semino, O.R. Rebolledo, C.L. Gómez Dumm, R.E. Hernández: Sequential determination of calcium distribution in B cells at the various phases of glucose-induced insulin secretion 290
Galluzzo, A., C. Giordano, G. Rubino, G.D. Bompiani: Immunoregulatory T-lymphocyte subset deficiency in newly diagnosed Type 1 (insulin-dependent) diabetes mellitus 426
Gragnoli, G., A.M. Signorini, I. Tanganelli: Non-enzymatic glycosylation of urinary proteins in Type 1 (insulin-dependent) diabetes: correlation with metabolic control and the degree of proteinuria 411
Green, A., F. Solander: Epidemiological studies of diabetes mellitus in Denmark: 6. Use of hospital services by insulin-treated diabetic patients 195
Green, A., P. Hougaard: Epidemiological studies of diabetes mellitus in Denmark: 5. Mortality and causes of death among insulin-treated diabetic patients 190
Groop, L., C.J.P. Eriksson, R. Huupponen, R. Ylikahri, R. Pelkonen: Roles of chlorpropamide, alcohol and acetaldehyde in determining the chlorpropamide-alcohol flush 34
Hadden, D.R., E. Byrne, I. Trotter, J.M.G. Harley, G. McClure, R.R. McAuley: Physical and psychological health of children of Type 1 (insulin-dependent) diabetic mothers 250
Haffner, S.M., D.M. Foster, R.S. Kushwaha, W.R. Hazzard: Retarded chylomicron apolipoprotein-B catabolism in Type 2 (non-insulin-dependent) diabetic with lipaemia 349
Harano, Y., K. Kosugi, T. Hyosu, M. Suzuki, H. Hidaka, A. Kashiwagi, S. Uno, Y. Shigeta: Ketone bodies as markers for Type 1 (insulin-dependent) diabetes and their value in the monitoring of diabetic control 343
Hasslacher, Ch., R. Reichenbacher, F. Gechter, R. Timpl: Glomerular basement membrane synthesis and serum concentration of type IV collagen in streptozotocin-diabetic rats 150
Hellqvist, L.N.B., C.J. Rhodes, K.W. Taylor: Long-term biochemical changes in the islets of Langerhans in mice following infection with encephalomyocarditis virus 370
Hillson, R.M., T.D.R. Hockaday, D.J. Newton: Hyperglycaemia is one correlate of deterioration in vibration sense during the five years after diagnosis of Type 2 (non-insulin-dependent) diabetes 122
Hilsted, J., F. Bonde-Petersen, M.-B. Nørgaard, M. Greniman, N.J. Christensen, H.-H. Parving, M. Suzuki: Haemodynamic changes in insulin-induced hypoglycaemia in normal man 328
Hutson, J.C.: Altered biochemical responses by rat Sertoli cells and peritubular cells cultured under simulated diabetic conditions 155
Johansen, K., P. Aa. Svendsen, B. Lørup: Variations in renal threshold for glucose in Type 1 (insulin-dependent) diabetes mellitus 180
Kadowaki, T., Y. Miyake, R. Hagura, Y. Akanuma, H. Kajinuma, N. Kuzuya, F. Takaku, K. Kosaka: Risk factors for worsening to diabetes in subjects with impaired glucose tolerance 44
Kanatsuka, A., M. Osegawa, T. An, T. Suzuki, N. Hashimoto, H. Makino: Augmented gastrin responses in diabetic patients with vagal neuropathy 449
Karlström, B., B. Vessby, N.-G. Asp, M. Boberg, I.-B. Gustafsson, 1
H. Lithell, I. Werner: Effects of an increased content of cereal fibre in the diet of Type 2 (non-insulin-dependent) diabetic patients 272
Keller, U., H. Schnell, J. Girard, W. Stauffacher: Effect of physiological elevation of plasma growth hormone levels on ketone body kinetics and lipolysis in normal and acutely insulin-deficient man 103
Kemnitz, J.W., S.G. Eisele, K.A. Lindsay, M.J. Engle, R.H. Perelman, P.M. Farrell: Changes in food intake during menstrual cycles and pregnancy of normal and diabetic Rhesus monkeys 60
King, H., P. Zimmet, L.R. Raper, B. Balkau: Natural history of impaired glucose tolerance in the Micronesian population of Nauru: a 6-year follow-up study 39
Kraegen, E.W., D.J. Chisholm: Insulin responses to varying profiles of subcutaneous insulin infusion: kinetic modelling studies 208
Krone, W., H. Greten: Evidence for post-transcriptional regulation by insulin of 3-hydroxy-3-methylglutaryl coenzyme A reductase and sterol synthesis in human mononuclear leucocytes 366
Kühn-Velten, N., R. Schermer, W. Staib: Effect of streptozotocin-induced hyperglycaemia on androgen-binding protein in rat testis and epididymis 300
Lager, I., H. von Schenck, U. Smith: Improved but not normalized glucose counter-regulation during glucagon infusion in Type 1 (insulin-dependent) diabetes 337
Lewin, I.G., I.A.D. O'Brian, M.H. Morgan, R.J.M. Corrall: Clinical and neurophysiological studies with the aldose reductase inhibitor, sorbinil, in symptomatic diabetic neuropathy 445
Lincoln, J., M. Crockett, A.J. Haven, G. Burnstock: Rat bladder in the early stages of streptozotocin-induced diabetes: adrenergic and cholinergic innervation 81
Lorenzi, M., E. Cagliero, B. Markey, T. Henriksen, J.L. Witztum, T. Sampietro: Interaction of human endothelial cells with elevated glucose concentrations and native and glycosylated low density lipoproteins 218
Ludvigsson, J.: Insulin antibodies in diabetic children treated with monocomponent porcine insulin from the onset: relationship to B-cell function and partial remission 138
Maruyama, T., I. Takei, I. Matsuba, A. Tsuruoka, M. Taniyama, Y. Ikeda, K. Kataoka, M. Abe, S. Matsuki: Cell-mediated cytotoxic islet cell surface antibodies to human pancreatic beta cells 30
Mathiesen, E.R., B. Oxenbøll, K. Johansen, P. Aa. Svendsen, T. Deckert: Incipient nephropathy in Type 1 (insulin-dependent) diabetes 406
McCulloch, D.K., R.J. Young, R.J. Prescott, I.W. Campbell, B.F. Clarke: The natural history of impotence in diabetic men 437
Nesher, R., B. Tuch, C. Hage, J. Levy, E. Cerasi: Time-dependent inhibition of insulin release: suppression of the arginine effect by hyperglycaemia 142
Nesher, R., L. Waldman, E. Cerasi: Time-dependent inhibition of insulin release: glucose-arginine interactions in the perfused rat pancreas 146
Niederau, C., M. Berger, W. Stremmel, A. Starke, G. Strohmeyer, R. Ebert, E. Siegel, W. Creutzfeldt: Hyperinsulinaemia in non-cirrhotic haemochromatosis: impaired hepatic insulin degradation? 441
Omar, M.A.K., M.G. Hammond, A.C. Asmal: HLA-A, B, C and DR antigens in young South African blacks with Type 1 (insulin-dependent) diabetes mellitus 20
Owens, D.R., I.R. Jones, A.J. Birtwell, C.T.R. Burge, S. Luzio, C.J. Davies, P. Heyburn, L.G. Heding: Study of porcine and human isophane (NPH) insulins in normal subjects 261
Pernet, A., E.R. Trimble, F. Kuntschen, P. Damoiseaux, J.-Ph. Assal, C. Hahn, A.E. Renold: Insulin resistance in Type 1 (insulin-dependent) diabetes: dependence on plasma insulin concentration 255
Peterson, C.M., L. Jovanovic, P. Raskin, D.E. Goldstein: A comparative evaluation of glycosylated haemoglobin assays: feasibility of references and standards 214
Ponchner, M., R.J. Heine, A. Pernet, I. Hanning, A.J. Francis, D. Cook, H. Ørskov, K.G.M.M. Alberti: A comparison of the artificial pancreas (glucose-controlled insulin infusion system) and a manual technique for assessing insulin sensitivity during euglycaemic clamping 420
Rahier, J., K. Fält, H. Müntefering, K. Becker, W. Gepts, S. Falkmer: The basic structural lesion of persistent neonatal hypoglycaemia with hyperinsulinism: deficiency of pancreatic D cells or hyperactivity of B cells? 282
Re, C.A., M.C. Veroni, R.G. Larkins: Effect of islet activating protein on glucose tolerance, insulin secretion and insulin responsiveness in the NZO mouse 304
Reeves, W.G., D. Barr, C.A. Douglas, K. Gelsthorpe, I. Hanning, A. Skene, L. Wells, R.M. Wilson, R.B. Tattersall: Factors governing the human immune response to injected insulin 266
Riccardi, G., A. Rivellese, D. Pacioni, S. Genovese, P. Mastranzo, M. Mancini: Separate influence of dietary carbohydrate and fibre on the metabolic control in diabetes 116
Rinninger, F., D. Kirsch, H.U. Häring, W. Kemmler: Extrapancreatic

action of the sulphonylurea gliquidone: post-receptor effect on insulin-stimulated glycogen synthesis in rat hepatocytes in primary culture 462
Sandler, S.: Protection by dimethyl urea against hyperglycaemia, but not insulitis, in low-dose streptozotocin-induced diabetes in the mouse 386
Schneider, S. H., L. F. Amorosa, A. K. Khachadurian, N. B. Ruderman: Studies on the mechanism of improved glucose control during regular exercise in Type 2 (non-insulin-dependent) diabetes 355
Seemayer, T. A., E. Colle: Pancreatic cellular infiltrates in autoimmune-prone New Zealand Black mice 310
Shamoon, H., R. Sherwin: B-Adrenergic blockade is more effective in suppressing adrenaline-induced glucose production in Type 1 (insulin-dependent) diabetes 183
Sodoyez, J. C., F. Sodoyez-Goffaux, S. Treves, C. R. Kahn, R. von Frenckell: In vivo imaging and quantitative analysis of insulin-receptor interaction in lean obese Zucker rats 229
Spiro, M. J.: Effect of diabetes on the sugar nucleotides of several tissues of the rat 70
Takahashi, R., I. Morita, Y. Saito, H. Ito, S. Murota: Increased arachidonic acid incorporation into platelet phospholipids in Type 2 (non-insulin-dependent) diabetes 134
Thams, P., K. Capito, C. J. Hedeskov: Characteristics of an adenylate cyclase enhancing factor from mouse pancreatic islet cytosol 375
Uusitupa, M., A. Aro, T. Korhonen, A. Tuuainen, H. Sarlund, I. Penttilä: Blood glucose and serum insulin responses to breakfast including guar gum and cooked or uncooked milk in Type 2 (non-insulin-dependent) diabetic patients 453
Vasquez, B., E. V. Flock, P. J. Savage, M. Nagulesparan, L. J. Bennion, H. R. Baird, P. H. Bennett: Sustained reduction of proteinuria in Type 2 (non-insulin-dependent) diabetes following diet-induced reduction of hyperglycaemia 127
Weinberg, C. R., T. L. Dornan, J. A. Hansen, P. K. Raghu, J. P. Palmer: HLA-related heterogeneity in seasonal patterns of diagnosis in Type 1 (insulin-dependent) diabetes 199
Werther, G. A., S. Joffe, R. Artal, M. A. Sperling: Opiates modulate insulin action in vivo in dogs 65
Wiseman, M., G. Viberti, D. Mackintosh, R. J. Jarrett, H. Keen: Glycaemia, arterial pressure and micro-albuminuria in Type 1 (insulin-dependent) diabetes mellitus 401
Yokono, K., K. Shii, J. Hari, S. Yaso, Y. Imamura, K. Ejiri, K. Ishihara, S. Fujii, T. Kazumi, H. Taniguchi, S. Baba: Production of monoclonal antibodies to islet cell surface antigens using hybridization of spleen lymphocytes from non-obese diabetic mice 379

Short communications

Budowle, B., J. M. Roseman, R. C. P. Go, B. O. Barger, R. T. Acton: The complement component C4 in black Americans with Type 1 (insulin-dependent) diabetes mellitus 166
Roberts, A. P., C. J. Story, R. G. Ryall: Erythrocyte 2,3-bisphosphoglycerate concentrations and haemoglobin glycosylation in normoxic Type 1 (insulin-dependent) diabetes mellitus 389

Workshop reports

Massi Benedetti, M., B. Hansen, K. Federlin, R. G. Bretzel, W. Waldhäusl, I. Navalescu, S. Raptis, F. Enzmann, E. F. Pfeiffer, M. Franetzki, W. Kerner: Report of the Second Workshop of the EASD Study Group on Artificial Insulin Delivery Systems, Pancreas and Islet Transplantation (AIDSPIT) 169

Letters to the editor

Barbosa, J., S. Rich: Type 1 (insulin-dependent) diabetes and genetic heterogeneity 170
Cobelli, C., A. Mari, E. Duner, F. Mollo, R. Nosadini: On the estimation of absorption of subcutaneous injected insulin from plasma concentrations using mathematical models 314
Davidson, M. B.: Glucagon deficiency associated with hypoglycaemia 473
Fisher, U., E. Salzsieder, G. Albrecht, E. Jutzi: Reply from the authors 315
Hutton, R. A., M. A. Barradas, R. de Albarran, P. Dandona: Adenine nucleotide metabolism in diabetes 89
Nerurkar, S. G., K. K. Gambhir: Insulin internalization in human erythrocytes 89
Sims, E. A. H.: The UK study of therapies of Type 2 (non-insulin-dependent) diabetes 88
Taylor, R., K. G. M. M. Alberti: Hyperproinsulinaemia in cirrhosis 392

Erratum

170

Announcements

92, 171, 240, 317, 392, 474

Author index and subject index are published on pages 475–478 at the end of this volume